

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently amended) A hydraulic brake device comprising a hydraulic pressure source for generating and outputting a predetermined hydraulic pressure, the hydraulic pressure source including a power-driven pump for producing hydraulic pressure and a pressure accumulator for accumulating hydraulic pressure produced by the pump, a pressure adjusting valve including a pressure adjusting mechanism for adjusting the output hydraulic pressure of said hydraulic pressure source to a value corresponding to a brake operating amount of a brake operating member, and wheel cylinders actuated by the output hydraulic pressure of said pressure adjusting valve for imparting braking force to wheels of a vehicle, further comprising a hydraulic passage leading from said pressure adjusting valve to said wheel cylinders, a hydraulic pressure supply passage for supplying hydraulic pressure from said hydraulic pressure source to said hydraulic passage at a junction therewith, the hydraulic pressure supply passage by-passing the pressure adjusting mechanism of the pressure adjusting valve, a first proportional solenoid valve provided in said hydraulic pressure supply passage for reducing the output hydraulic pressure of said hydraulic pressure source before being supplied to said hydraulic passage, a second proportional solenoid valve provided in said hydraulic passage at a location between said pressure adjusting valve and said junction and operable for reducing the output hydraulic pressure supplied from said hydraulic pressure supply passage, a check valve provided in parallel to said second proportional solenoid valve for allowing fluid

flow from said pressure adjusting valve to said junction while bypassing said second proportional solenoid valve, and a controller for controlling said first and second proportional solenoid valves, each of said first and second proportional solenoid valves being of the type in which a differential pressure between upstream hydraulic pressure and downstream hydraulic pressure thereof is controllable to a value corresponding to a control current applied thereto, wherein control of the hydraulic pressure supplied to said wheel cylinders during automatic brake control is performed by operating said first proportional solenoid valve to increase the hydraulic pressure in the wheel cylinders and by operating said second proportional solenoid valve to decrease the hydraulic pressure in the wheel cylinders, and wherein when the output hydraulic pressure of said pressure adjusting valve exceeds the hydraulic pressure in the wheel cylinders in response to operation of the brake operating member during the automatic brake control, the output hydraulic pressure of said pressure adjusting valve is supplied into the wheel cylinders through the check valve the degree of valve openness is adjustable between a closed position and a plurality of open positions of different degrees of openness, said controller being capable of individually adjusting the degrees of openness of said first and second proportional solenoid valves to required levels between their fully open and fully closed positions to adjust the wheel cylinder pressure to a required level, and the controller applies a control current to each of the first and second proportional solenoid valves to control differential pressure between upstream hydraulic pressure and downstream hydraulic pressure of each of said first and second proportional solenoid valves to a value corresponding to the applied control current.

2. (Currently amended) A hydraulic brake device comprising a hydraulic pressure source for generating and outputting a predetermined hydraulic pressure, the hydraulic pressure source including a power-driven pump for producing hydraulic pressure and a pressure accumulator for accumulating hydraulic pressure produced by the pump, a pressure adjusting valve including a pressure adjusting mechanism for adjusting the output hydraulic pressure of said hydraulic pressure source to a value corresponding to a brake operating amount of a brake operating member, a pressure chamber connected to said pressure adjusting valve, a master cylinder including a master piston actuated by the output hydraulic pressure of said pressure adjusting valve introduced into said pressure chamber or the output hydraulic pressure of said pressure adjusting valve introduced into said pressure chamber and the brake operating force applied to the brake operating member for generating brake hydraulic pressure, and wheel cylinders actuated by the output hydraulic pressure of said master cylinder for imparting braking force to wheels of a vehicle, further comprising a hydraulic system leading from said master cylinder to said wheel cylinders, a hydraulic passage connecting said pressure adjusting valve to said hydraulic system, a solenoid valve in said hydraulic passage, a hydraulic pressure supply passage for supplying hydraulic pressure from said hydraulic pressure source to said hydraulic passage at a junction therewith located upstream of said solenoid valve, the hydraulic pressure supply passage by-passing the pressure adjusting mechanism of the pressure adjusting valve, a first proportional solenoid valve provided in said hydraulic pressure supply passage for reducing the output hydraulic pressure of said hydraulic pressure source before being supplied to

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said hydraulic passage, a second proportional solenoid valve provided in said
hydraulic passage at a location between said pressure adjusting valve and said
junction and operable for reducing hydraulic pressure supplied from said hydraulic
pressure supply passage, a check valve provided in parallel to said second
proportional solenoid valve for allowing fluid flow from said pressure adjusting valve
to said junction while bypassing said second proportional solenoid valve, and a
controller for controlling said first and second proportional solenoid valves, each of
said first and second proportional solenoid valves being of the type in which a
differential pressure between upstream hydraulic pressure and downstream
hydraulic pressure thereof is controllable to a value corresponding to a control
current applied thereto, wherein control of the hydraulic pressure supplied to said
wheel cylinders during automatic brake control is performed by operating said
solenoid valve and by operating said first proportional solenoid valve to increase the
hydraulic pressure in the wheel cylinders and by operating said second proportional
solenoid valve to decrease the hydraulic pressure in the wheel cylinders, and
wherein when the output hydraulic pressure of said pressure adjusting valve
exceeds the hydraulic pressure in the wheel cylinders in response to operation of the
brake operating member during the automatic brake control, the output hydraulic
pressure of said pressure adjusting valve is supplied into the wheel cylinders through
the check valve the degree of valve openness is adjustable between a closed
position and a plurality of open positions of different degrees of openness, said
controller being capable of individually adjusting the degrees of openness of said first
and second proportional solenoid valves to required levels between their fully open
and fully closed positions to adjust the wheel cylinder pressure to a required level.

3. (Currently amended) A hydraulic brake device comprising a hydraulic pressure source for generating and outputting a predetermined hydraulic pressure, the hydraulic pressure source including a power-driven pump for producing hydraulic pressure and a pressure accumulator for accumulating hydraulic pressure produced by the pump, a pressure adjusting valve including a pressure adjusting mechanism for adjusting the output hydraulic pressure of said hydraulic pressure source to a value corresponding to a brake operating amount of a brake operating member, a pressure chamber connected to said pressure adjusting valve, a master cylinder including a master piston actuated by the output hydraulic pressure of said pressure adjusting valve introduced into said pressure chamber or the output hydraulic pressure of said pressure adjusting valve introduced into said pressure chamber and the brake operating force applied to the brake operating member for generating brake hydraulic pressure, and wheel cylinders actuated by the output hydraulic pressure of said master cylinder for imparting braking force to wheels of a vehicle, further comprising a hydraulic passage connecting said pressure adjusting valve to said pressure chamber, a hydraulic pressure supply passage for supplying hydraulic pressure from said hydraulic pressure source to said hydraulic passage at a junction therewith, the hydraulic pressure supply passage by-passing the pressure adjusting mechanism of the pressure adjusting valve, a first proportional solenoid valve provided in said hydraulic pressure supply passage for reducing the output hydraulic pressure of said hydraulic pressure source before being supplied to said hydraulic passage, a second proportional solenoid valve provided in said hydraulic passage at a location between said pressure adjusting valve and said junction and operable for

reducing the hydraulic pressure supplied from said hydraulic pressure supply passage, a check valve provided in parallel to said second proportional solenoid valve for allowing fluid flow from said pressure adjusting valve to said junction while bypassing said second proportional solenoid valve, and a controller for controlling said first and second proportional solenoid valves, each of said first and second proportional solenoid valves being of the type in which a differential pressure between upstream hydraulic pressure and downstream hydraulic pressure thereof is controllable to a value corresponding to a control current applied thereto, wherein control of the hydraulic pressure supplied to said wheel cylinders during automatic brake control is performed by operating said first proportional solenoid valve to increase the hydraulic pressure in the wheel cylinders and by operating said second proportional solenoid valve to decrease the hydraulic pressure in the wheel cylinders, and wherein when the output hydraulic pressure of said pressure adjusting valve exceeds the hydraulic pressure in the wheel cylinders in response to operation of the brake operating member during the automatic brake control, the output hydraulic pressure of said pressure adjusting valve is supplied into the wheel cylinders through the check valve the degree of valve openness is adjustable ~~between a closed position and a plurality of open positions of different degrees of~~ ~~openness, said controller being capable of individually adjusting the degrees of~~ ~~openness of said first and second proportional solenoid valves to required levels~~ ~~between their fully open and fully closed positions to adjust the wheel cylinder~~ ~~pressure to a required level, and the controller applies a control current to each of~~ ~~the first and second proportional solenoid valves to control differential pressure~~ ~~between upstream hydraulic pressure and downstream hydraulic pressure of each of~~

~~said first and second proportional solenoid valves to a value corresponding to the applied control current.~~

4. (Previously presented) A hydraulic brake device as claimed in claim 1, further comprising a detector for detecting that the output hydraulic pressure of said pressure adjusting valve has become equal to the hydraulic pressure of said hydraulic pressure supply passage, and wherein when it is detected by said detector that the output hydraulic pressure of said pressure adjusting valve has become equal to the hydraulic pressure of said hydraulic pressure supply passage, automatic brake control is stopped.

5. (Previously presented) A hydraulic brake device as claimed in claim 2, further comprising a detector for detecting that the output hydraulic pressure of said pressure adjusting valve has become equal to the hydraulic pressure of said hydraulic pressure supply passage, and wherein when it is detected by said detector that the output hydraulic pressure of said pressure adjusting valve has become equal to the hydraulic pressure of said hydraulic pressure supply passage, automatic brake control is stopped.

6. (Previously presented) A hydraulic brake device as claimed in claim 3, further comprising a detector for detecting that the output hydraulic pressure of said pressure adjusting valve has become equal to the hydraulic pressure of said hydraulic pressure supply passage, and wherein when it is detected by said detector that the output hydraulic pressure of said pressure adjusting valve has become equal

to the hydraulic pressure of said hydraulic pressure supply passage, automatic brake control is stopped.

7. (Withdrawn) A hydraulic brake device as claimed in claim 1, further comprising a wheel cylinder pressure detector for detecting the hydraulic pressure of said wheel cylinders, and wherein when it is detected that the hydraulic pressure of said wheel cylinders is higher than the hydraulic pressure controlled by said first proportional solenoid valve and said second proportional solenoid valve, automatic brake control is stopped.

8. (Withdrawn) A hydraulic brake device as claimed in claim 2, further comprising a wheel cylinder pressure detector for detecting the hydraulic pressure of said wheel cylinders, and wherein when it is detected that the hydraulic pressure of said wheel cylinders is higher than the hydraulic pressure controlled by said first proportional solenoid valve and said second proportional solenoid valve, automatic brake control is stopped.

9. (Withdrawn) A hydraulic brake device as claimed in claim 3, further comprising a wheel cylinder pressure detector for detecting the hydraulic pressure of said wheel cylinders, and wherein when it is detected that the hydraulic pressure of said wheel cylinders is higher than the hydraulic pressure controlled by said first proportional solenoid valve and said second proportional solenoid valve, automatic brake control is stopped.

10.-14. (Cancelled)